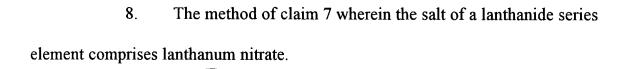
We claim:

A method of preparing thermally stable transitional alumina comprising the steps of:

- a) \ providing an aqueous solution of an aluminum salt;
- b) treating the aluminum solution with a hydroxyl group anionexchanger to produce a composition comprising aluminum hydroxides;
- c) freeze-drying the aluminum hydroxide composition to produce a aluminum hydroxide powder; and
- d) dehydrating the aluminum hydroxide powder to yield particulates of γ-alumina.
- 2. The method of claim 1 wherein the salt of aluminum is aluminum nitrate.
- 3. The method of claim 2 wherein the aqueous solution comprises 1 M Al(NO₃)₃.
- 4. The method of claim 1 wherein the aluminum hydroxide composition has a pH of about 6 to about 8.

- 5. The method of claim 1 wherein said dehydrating step comprises (i) heating the aluminum hydroxide powder to a temperature of about 600° C to about 800° C to produce γ -alumina and (ii) cooling the γ -alumina.
- 6. A method of preparing thermally stable transitional alumina comprising the steps of:
 - a) providing an aqueous solution of an aluminum salt and a salt of a lanthanide series element;
 - b) treating the aluminum solution with a hydroxyl group anionexchanger to produce a composition comprising aluminum hydroxides and hydroxides of the landhanide series element;
 - c) freeze-drying the hydroxide composition to produce a powder comprising the aluminum hydroxides and the hydroxides of the lanthanide series element; and
 - d) dehydrating the powder to yield particulates of γ -alumina containing the lanthanide series element.
- 7. The method of claim 6 wherein the aluminum salt comprises aluminum nitrate.



- 9. The method of claim 8 wherein a molar ratio of aluminum to lanthanum in the aqueous solution is about 0.0003 to about 0.03.
- 10. The method of claim 9 wherein a molar ratio of aluminum to lanthanum in the aqueous solution is about 0.001 to about 0.003.
- 11. The method of claim 8 wherein the concentration of lanthanum oxide in the γ -alumina is about 0.1 to about 0.3 mol%.
- 12. The method of claim 6 wherein the aluminum hydroxide composition has a pH of about 6 to about 8.
- 13. The method of claim 6 wherein said dehydrating step comprises (i) heating the aluminum hydroxide powder to a temperature of about 600° C to about 800° C to produce γ -alumina and (ii) cooling the γ -alumina.

- 4. A catalytic support alumina comprising γ -alumina and lanthanum oxide wherein the concentration of lanthanum oxide in the support is about 0.1 to 0.3 mol%.
- 15. The composition of claim 14 wherein said alumina retains a specific surface area of over about 85 m²/g after annealing at about 1000° C for about 3 hours.
 - 16. The composition of claim 14 wherein said alumina is prepared by
 - a) providing an aqueous solution of an aluminum salt and a lanthanum salt;
 - b) treating the aluminum solution with a hydroxyl group anionexchanger to produce a composition comprising aluminum hydroxides and lanthanum hydroxides;
 - c) freeze-drying the hydroxide composition to produce a powder comprising aluminum hydroxide and lanthanum hydroxide; and
 - d) dehydrating the powder to yield particulates of γ -alumina containing lanthanum oxide.